中国能源革命与可再生能源发展

Energy Revolution and Renewable Energy Development in China

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China Calls for Energy Revolution

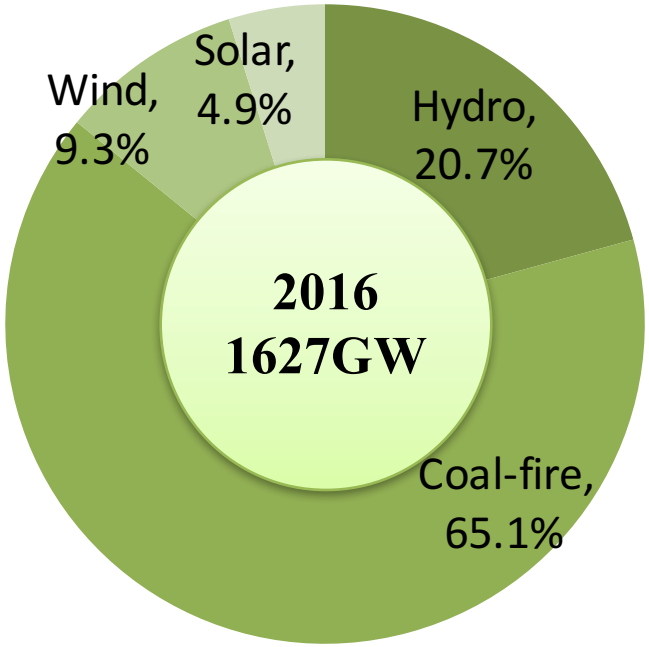
国家主席习近平倡导积极推动中国能源生产和消费革命。
President Xi's call for Energy Revolution
— Energy Production and Consumption Reform

中国提出，二氧化碳排放2030年左右达到峰值，单位国内生产总值二氧化碳排放比2005年下降60%-65%，非化石能源占一次能源消费比重达到20%左右。
China aims to peak its greenhouse gas emissions, to cut its emissions per unit of gross domestic product by 60-65% from 2005 levels, and to increase the share of non-fossil fuels as part of its primary energy consumption to about 20% by 2030.

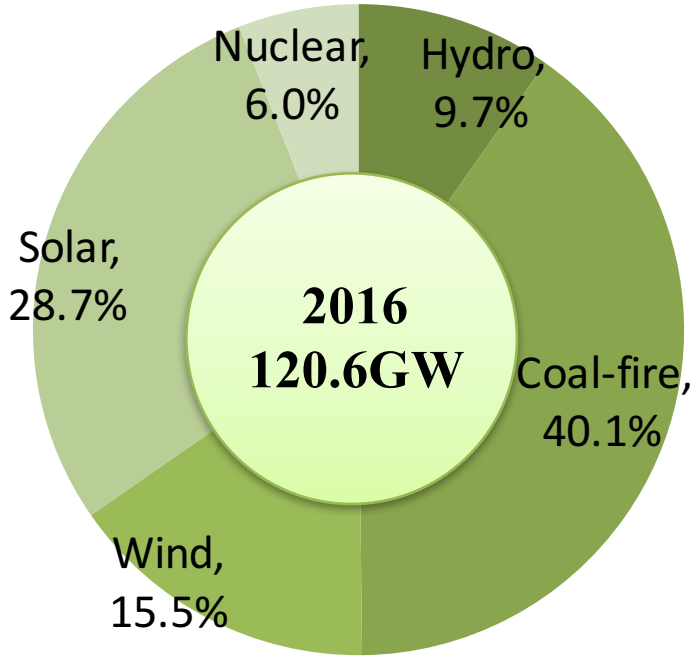
Renewable Energy Facilitates Energy Revolution

2016年中国风电装机容量达到1.5亿千瓦，光伏装机容量达到7700万千瓦，均位列世界第一。我国已成为水电、风电、太阳能发电装机世界第一大国。

China is leading the world in wind (150GW), solar (77GW) and hydro (331GW) installations.



2016 China's cumulative installation

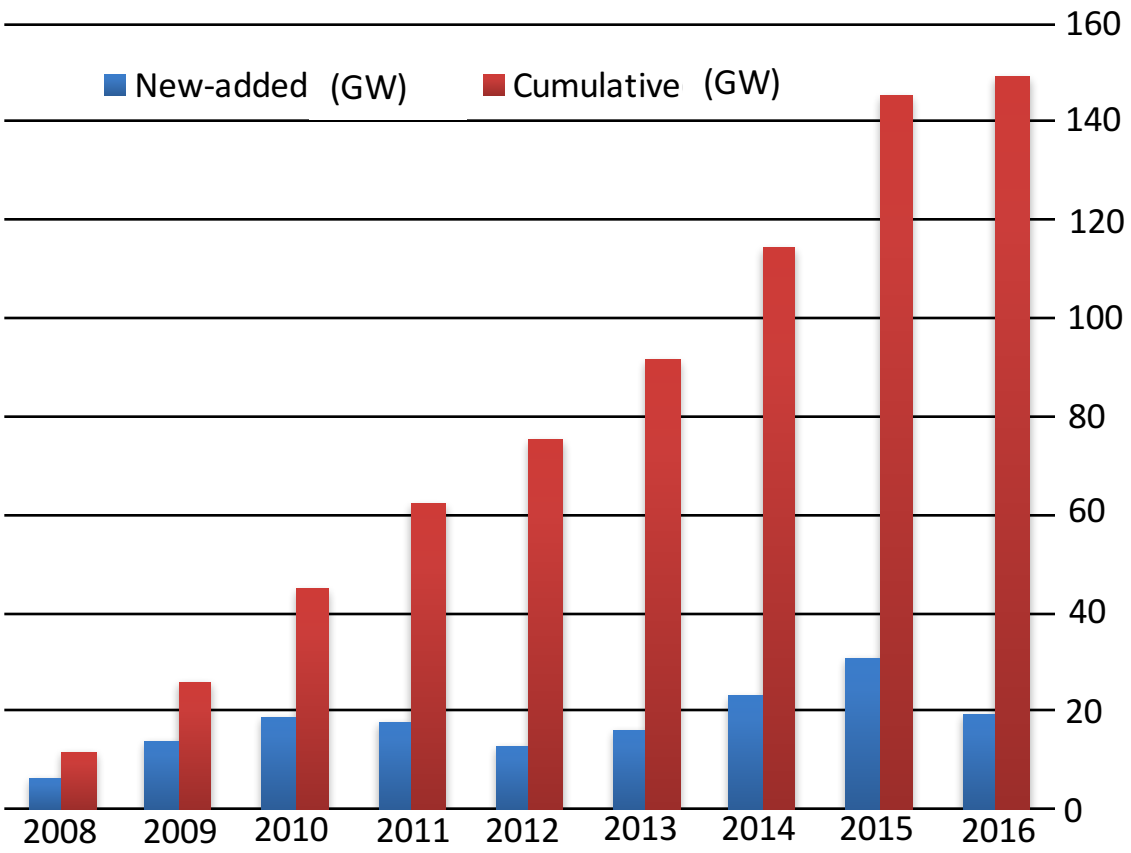


2016 China's new-added installation

Renewable Energy Facilitates Energy Revolution

2016年，全年新增风电装机1930万千瓦，累计并网装机容量达到1.49亿千瓦，占全部发电装机容量的9%，风电发电量2410亿千瓦时，占全部发电量的4%。

In 2016, China installed 19.3GW of wind, with cumulative installed capacity of 149 GW, generated 241 billion kWh.

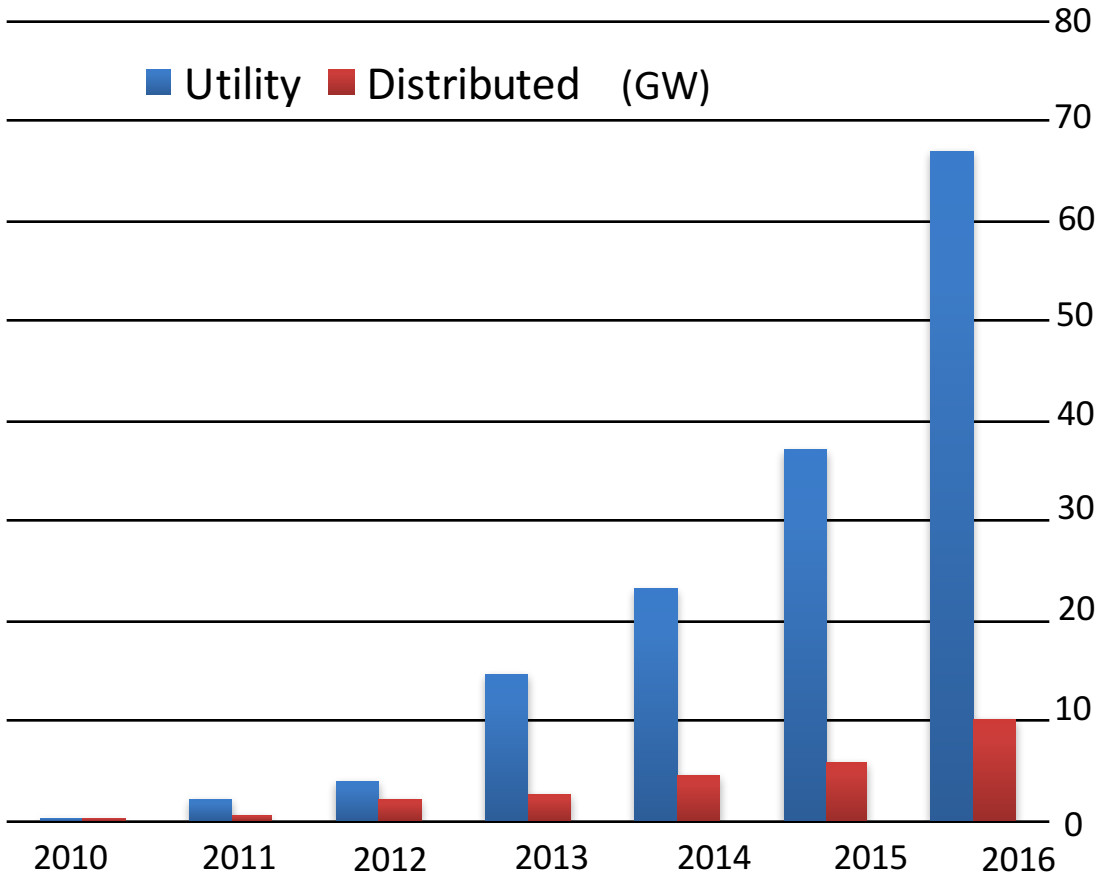


2016 China's wind power installation

Renewable Energy Facilitates Energy Revolution

2016年，光伏发电新增装机3454万千瓦，累计装机容量7742万千瓦，全年发电量662亿千瓦时，占我国全年总发电量的1%。

In 2016, China installed 34.54 GW of Solar PV, and the country's cumulative installed solar capacity reached 77.42 GW, generated 66.2 billion kWh.

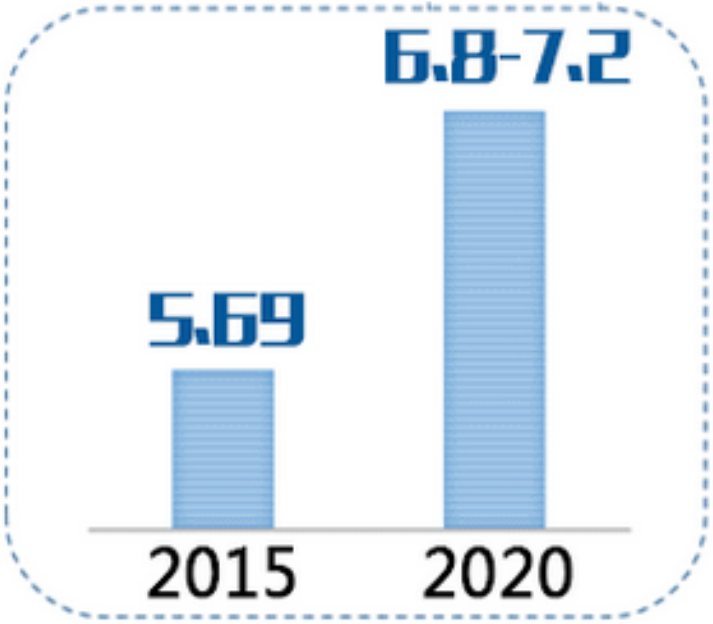


2016 China's solar PV installation

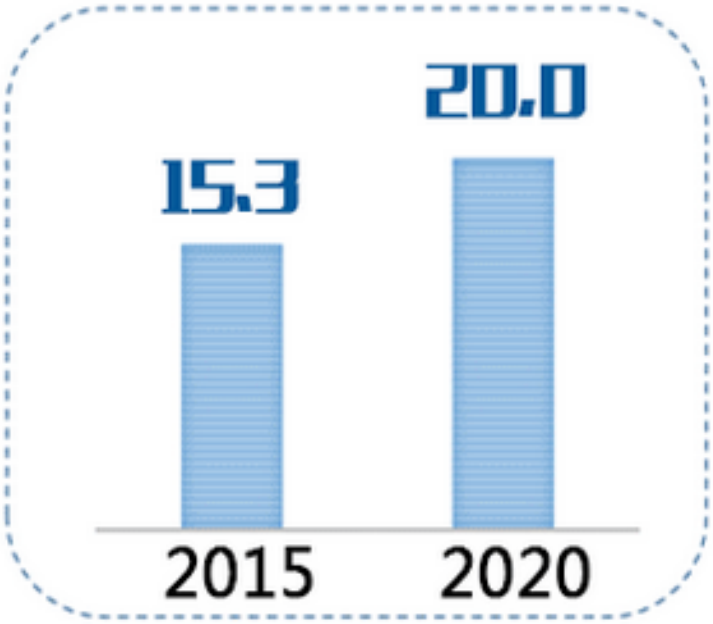
China's National Targets Support Renewable Energy

中国电力发展“十三五”规划

China's Power Sector 13th Five Year Plan



China's electric power consumption will reach 6,800-7,200 TWh of electricity, increasing on average by 3.6-4.8% each year.



China's electric generation capacity will reach 2,000 GW by 2020, with an average increase of 5.5% each year.

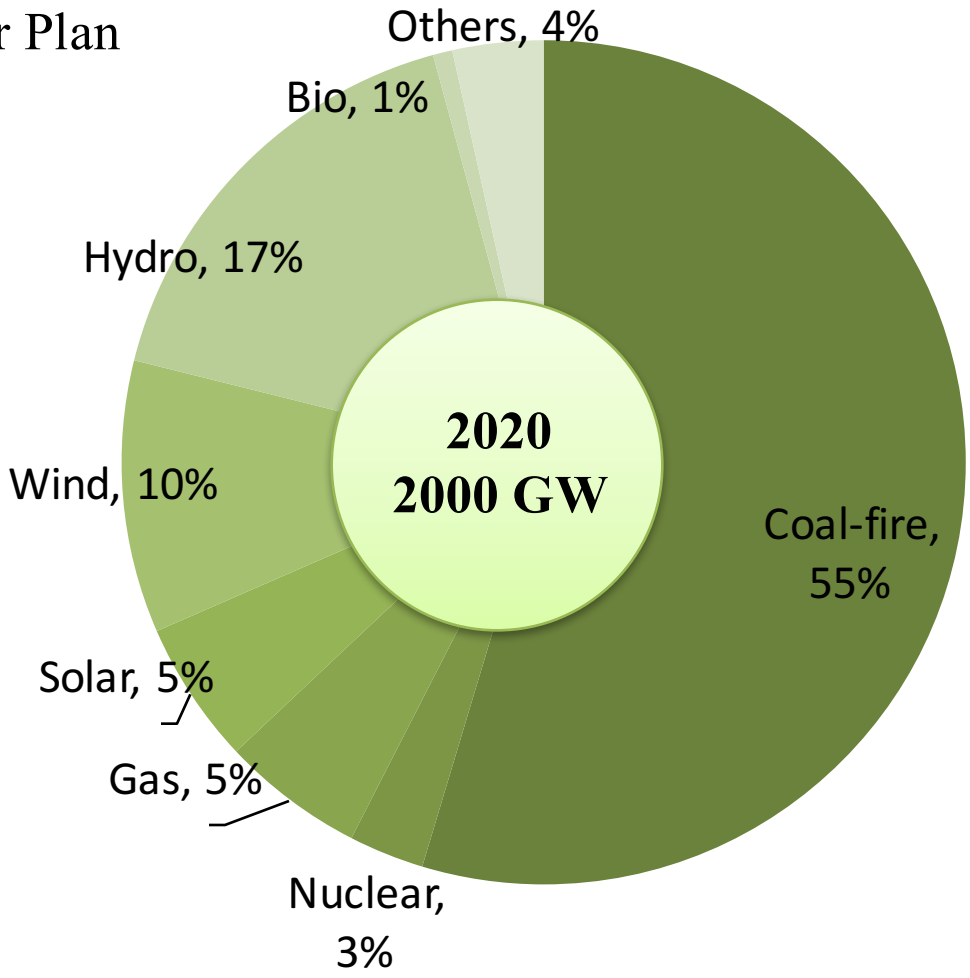
China's National Targets Support Renewable Energy

中国电力发展“十三五”规划

China's Power Sector 13th Five Year Plan

非化石能源发电装机达到7.7亿千瓦左右，比2015年增加2.5亿千瓦左右，占比39%，提高4个百分点，发电量占比提高到31%，满足15%非化石能源消费比重的要求。

According to the plan, China will achieve its 15% non-fossil energy consumption target by 2020. Non-fossil power capacity will reach 770GW, accounting for 39% of total power installation, generating 31% of the country's electric power.

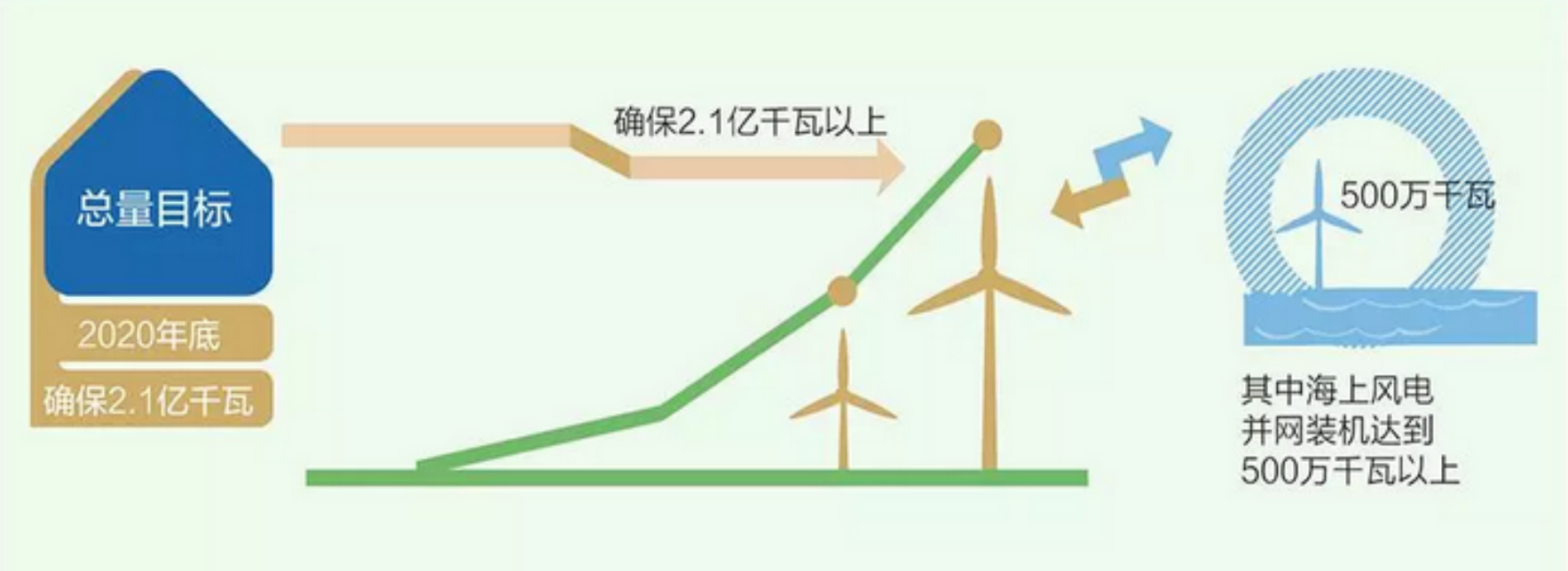


2020 China's electric power installation

China's National Targets Support Renewable Energy

中国风电发展“十三五”规划

China's Wind Power Development 13th Five Year Plan

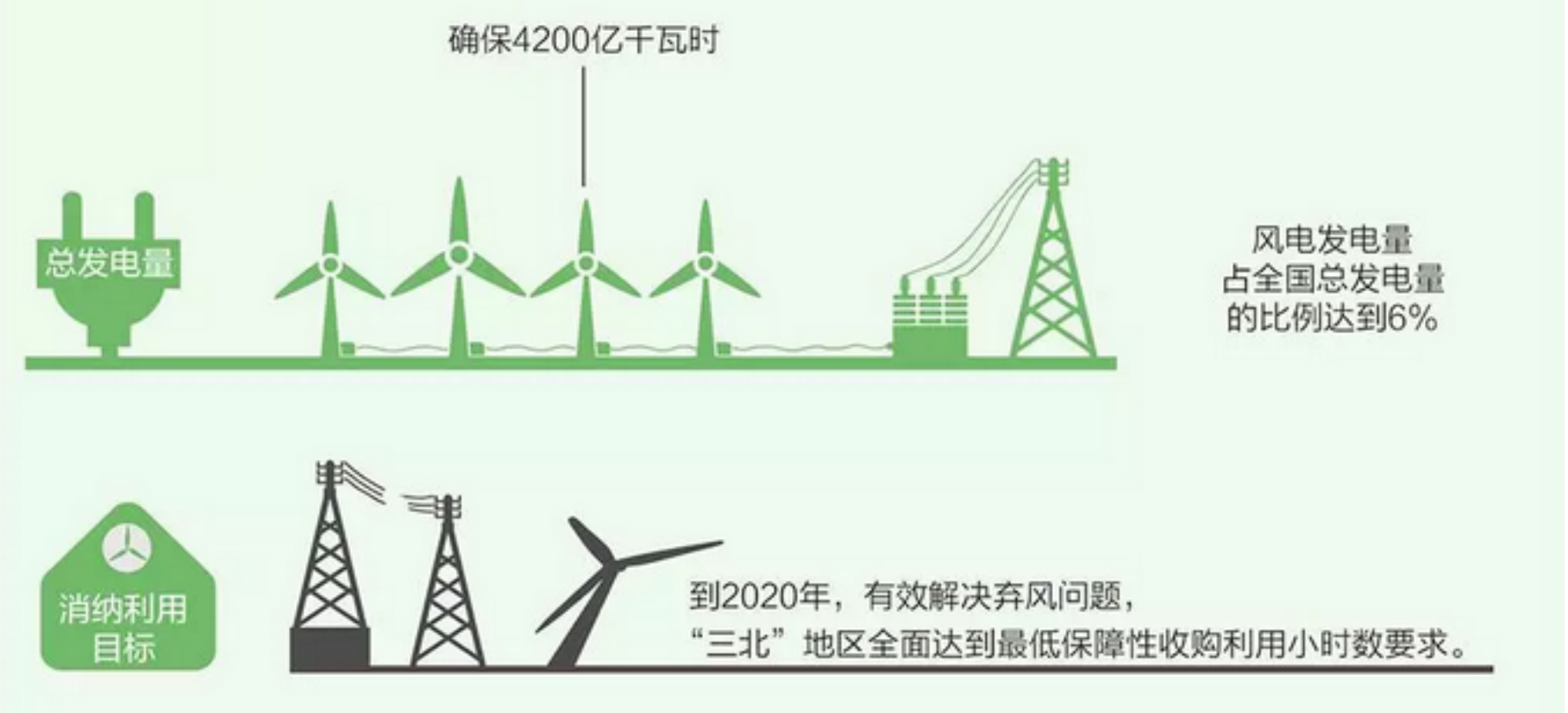


China aims to have total installed wind capacity of 210 GW by 2020, of which 5 GW will be off-shore wind projects.

China’s National Targets Support Renewable Energy

中国风电发展“十三五”规划

China’s Wind Power Development 13th Five Year Plan

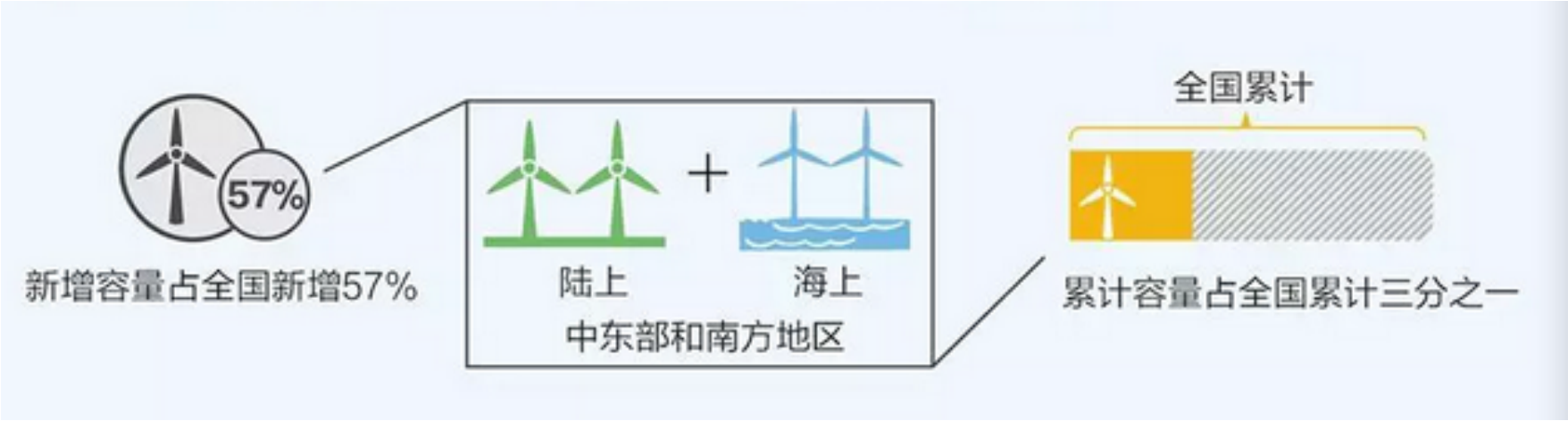


420 TWh of electricity will be generated from wind, accounting for 6% of total electric power supply. Wind curtailment is targeted to be solved.

China’s National Targets Support Renewable Energy

中国风电发展“十三五”规划

China’s Wind Power Development 13th Five Year Plan

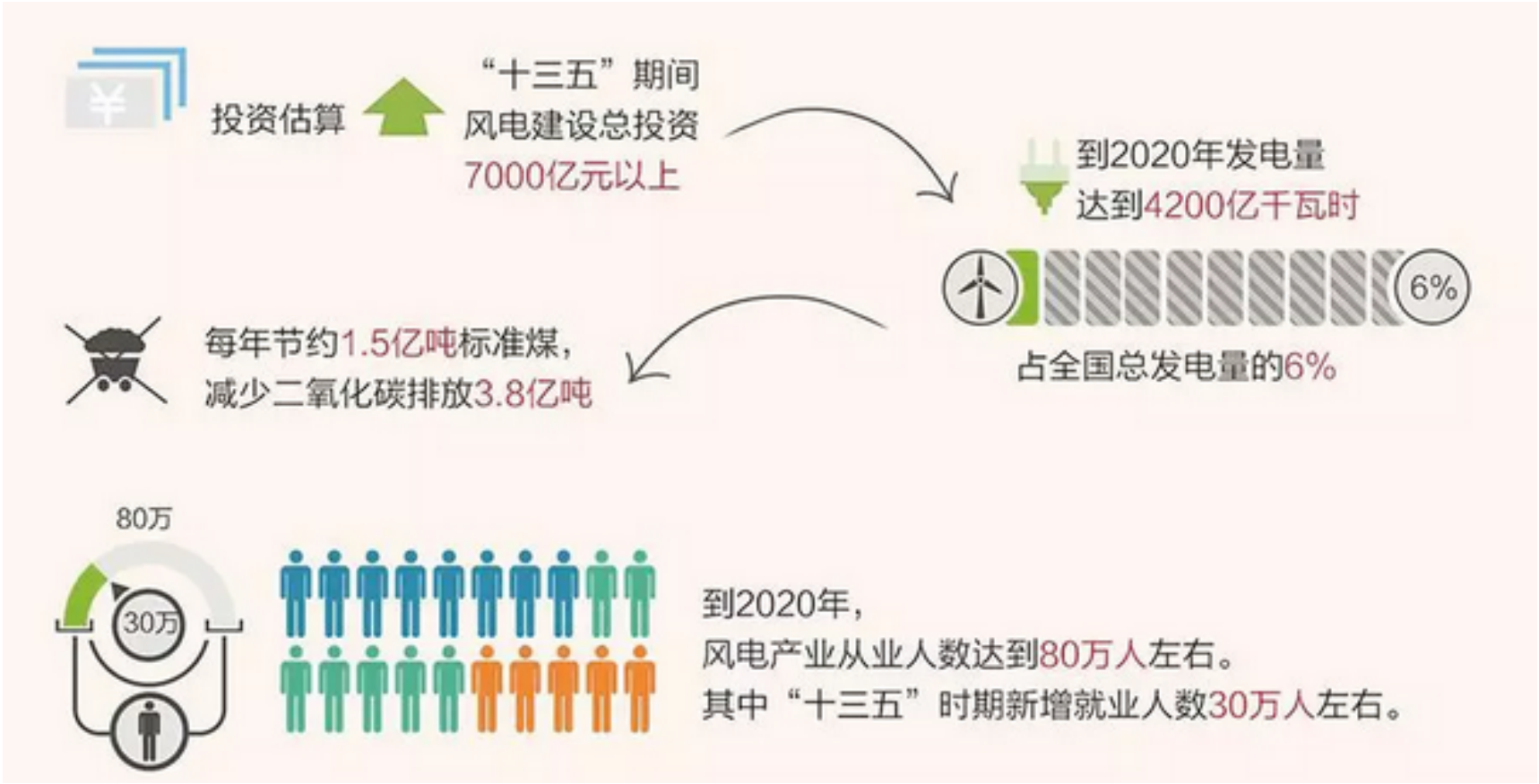


From 2016 to 2020, newly installed on-shore and off-shore wind capacity in China’s eastern and southern area will reach 57% of the country’s total new-added wind installation. The eastern and southern area will account for 1/3 of the country’s cumulative wind capacity.

China's National Targets Support Renewable Energy

中国风电发展“十三五”规划

China's Wind Power Development 13th Five Year Plan



From 2016 to 2020, wind power investment will reach 700 billion CNY, reduce 380 million tons of CO_2 emissions per year, generate 420 TWh of electricity, and create 300 thousand jobs.

China’s National Targets Support Renewable Energy

中国太阳能发展“十三五”规划

China’s Solar Development 13th Five Year Plan

到2020年，太阳能发电装机达到1.1亿千瓦以上，其中光伏发电装机1.05亿千瓦以上，太阳能热发电装机达到500万千瓦。

The 2020 solar target is more than 110GW, split into 105 GW of solar PV and 5 GW of Concentrating Solar Power (CSP).

China’s National Targets Support Renewable Energy

中国太阳能发展“十三五”规划

China’s Solar Development 13th Five Year Plan

到2020年，光伏发电电价水平在2015年基础上下降50%以上，在用电侧实现平价上网目标；太阳能热发电成本低于0.8元/千瓦时。

PV generation cost is committed to reduce over 50% on the basis of 2015 level, reaching grid parity by 2020.

China’s National Targets Support Renewable Energy

中国太阳能发展“十三五”规划

China’s Solar Development 13th Five Year Plan

大力推进屋顶分布式光伏发电，到2020年建成100个分布式光伏应用示范园。结合电力体制改革开展分布式光伏发电市场化交易。

Distributed PV enjoys a very prominent position in the plan. 100 DG demonstration parks are expected to set up by 2020. Innovative business models and PV power market shall be created to stimulate demand in the DG segment.

China’s National Targets Support Renewable Energy

中国太阳能发展“十三五”规划

China’s Solar Development 13th Five Year Plan

合理布局光伏电站，结合电力外送通道建设太阳能发电基地，实施光伏“领跑者”计划。

Improve the planning of scaled ground-mounted PV power bases, and increase renewable energy electricity share in the capacity of transmission channels.

Implement the competitive bidding mechanism based “Top-Runner-Program”. In 2016, “Top-Runner-Program” expanded to 5.5 GW, accounting for 30% of last year’s guiding target.

China's National Targets Support Renewable Energy

中国太阳能发展“十三五”规划

China's Solar Development 13th Five Year Plan

PV Poverty Alleviation Projects

CSP Demonstration Projects

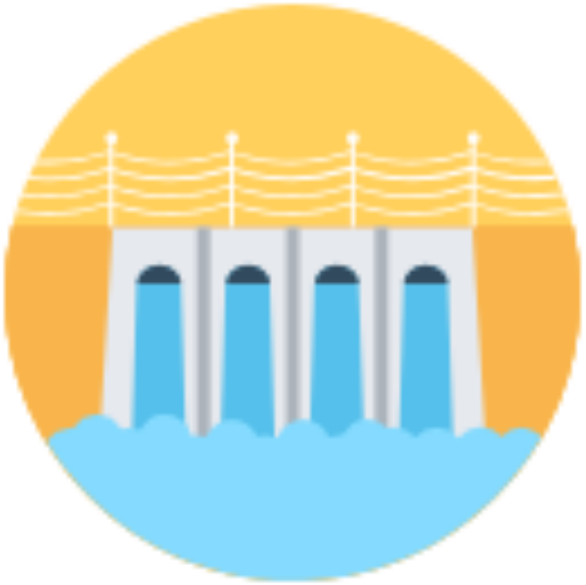
New Energy Micro-Grid Pilots

Solar Heating Projects

China’s National Targets Support Renewable Energy

中国“十三五”规划中的其他可再生能源电力

China’s 13th Five Year Plan – other renewable energy technologies



水电发电装机达到340GW，“十三五”期间新增40GW。

Add 40 GW hydropower capacity, with total installation reaching 340 GW by 2020.

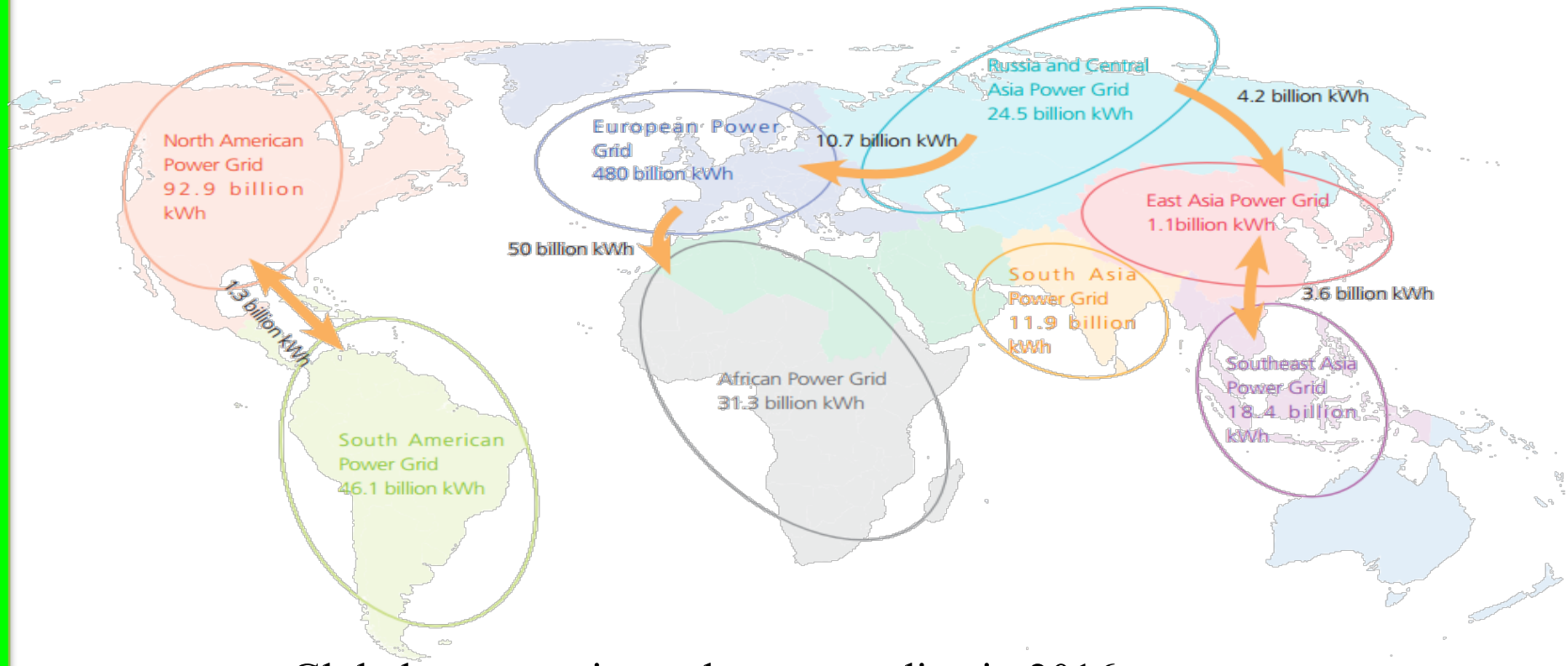
到2020年，生物质发电装机达到15GW。

Reach 15 GW of bioenergy generation capacity by 2020.

China's National Targets Support Renewable Energy

习近平倡议“探讨构建全球能源互联网，推动以清洁和绿色方式满足全球电力需求”。

President Xi proposed discussion on establishing a global energy network to facilitate efforts to meet the global power demand with clean and green alternatives.

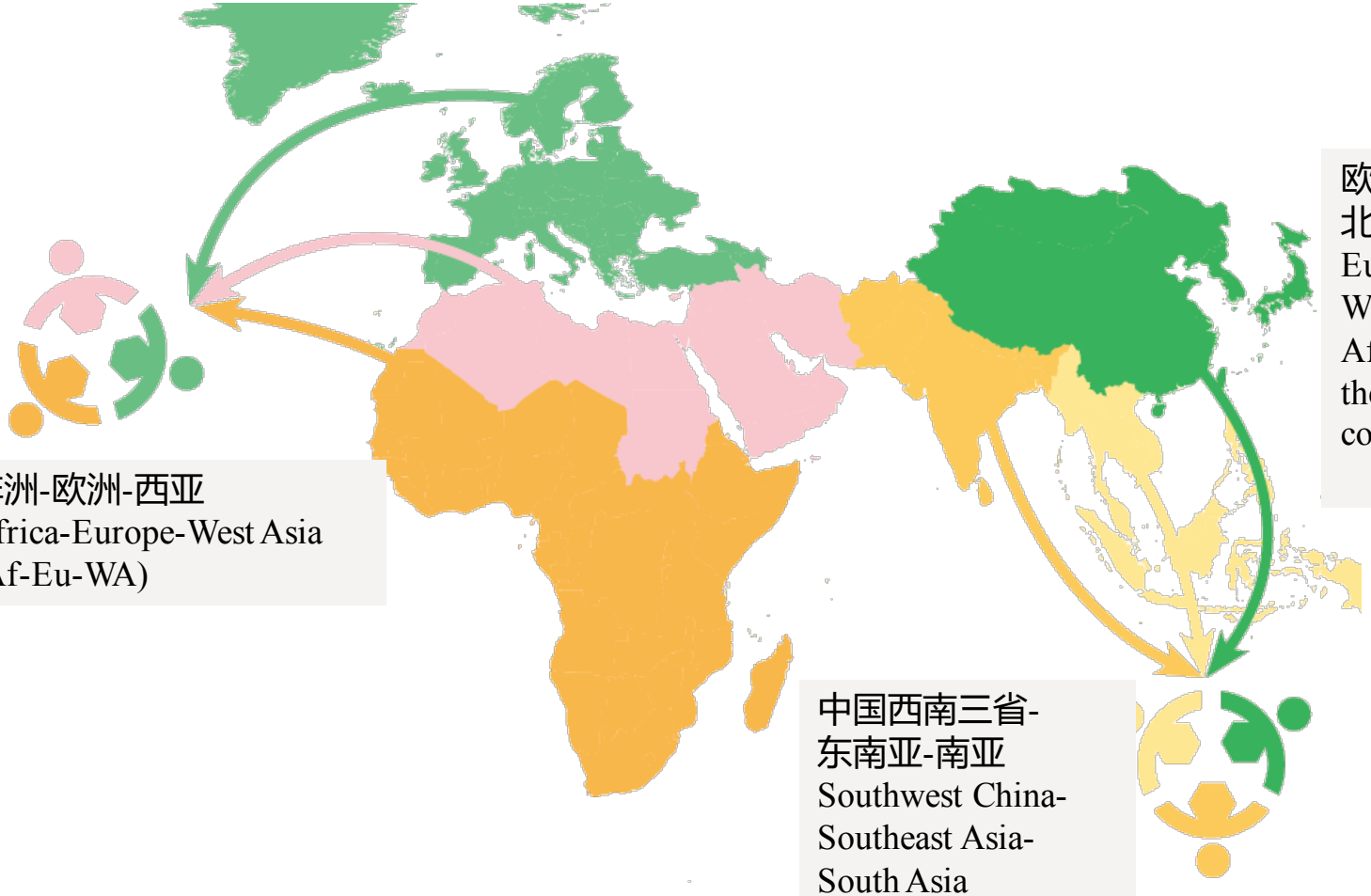


Global transcontinental power trading in 2016

Source: Global Energy Interconnection Development and Outlook Report 2017, GEIDCO.

China's National Targets Support Renewable Energy

全球能源互联网近中期发展重点区域
Highlight development regions in the short and mid-term.



欧洲、东亚、西亚和北非纳入统筹考虑
Europe, East Asia, West Asia and North Africa are taken into the overall strategic consideration.

非洲-欧洲-西亚
Africa-Europe-West Asia (Af-Eu-WA)

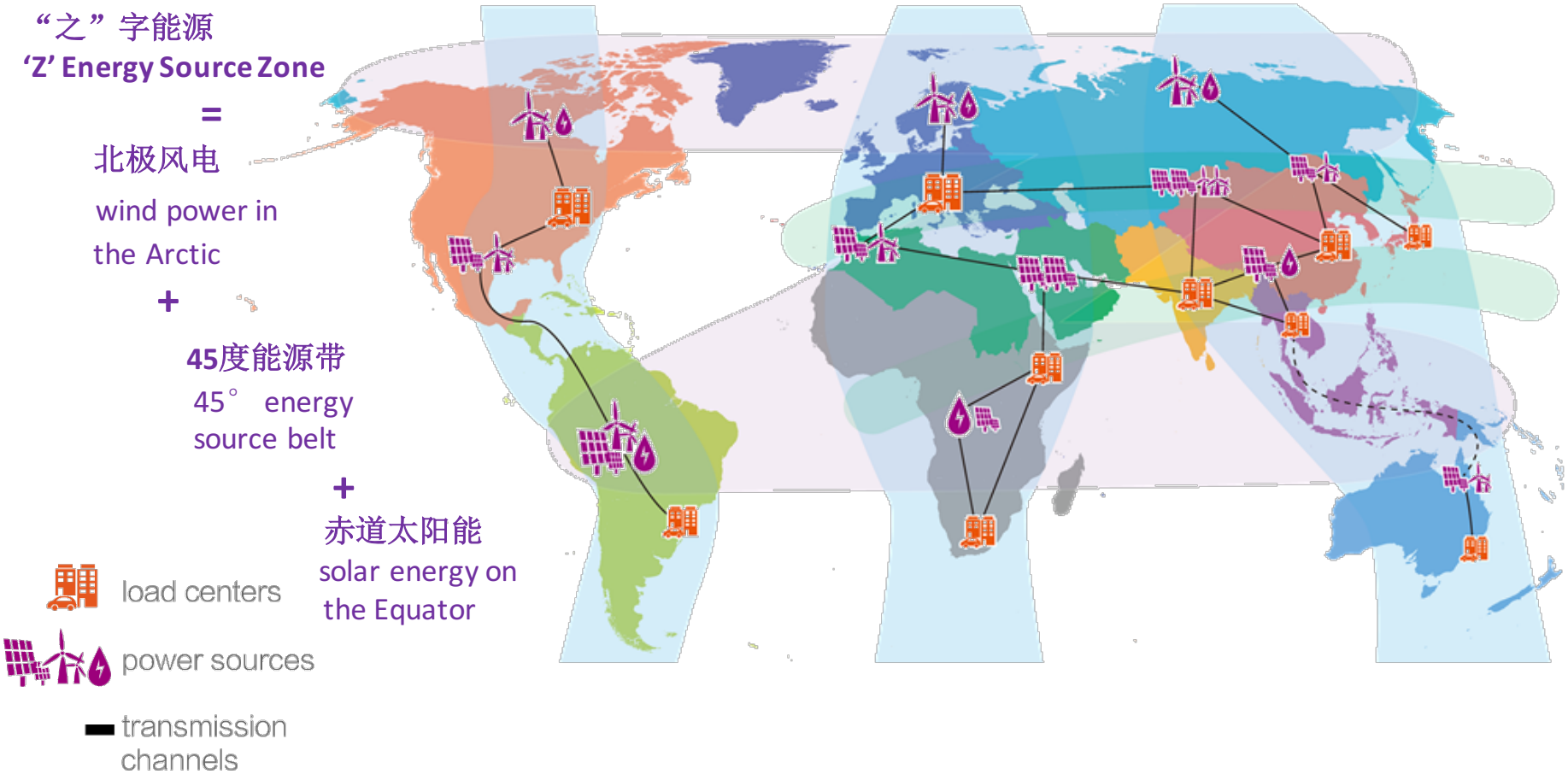
中国西南三省-东南亚-南亚
Southwest China-Southeast Asia-South Asia (Cn-SEA-SA)

Source: Global Energy Interconnection Development and Outlook Report 2017, GEIDCO.

China's National Targets Support Renewable Energy

全球能源互联网展望：“合纵连横”

Global outlook: vertical integration and horizontal connection



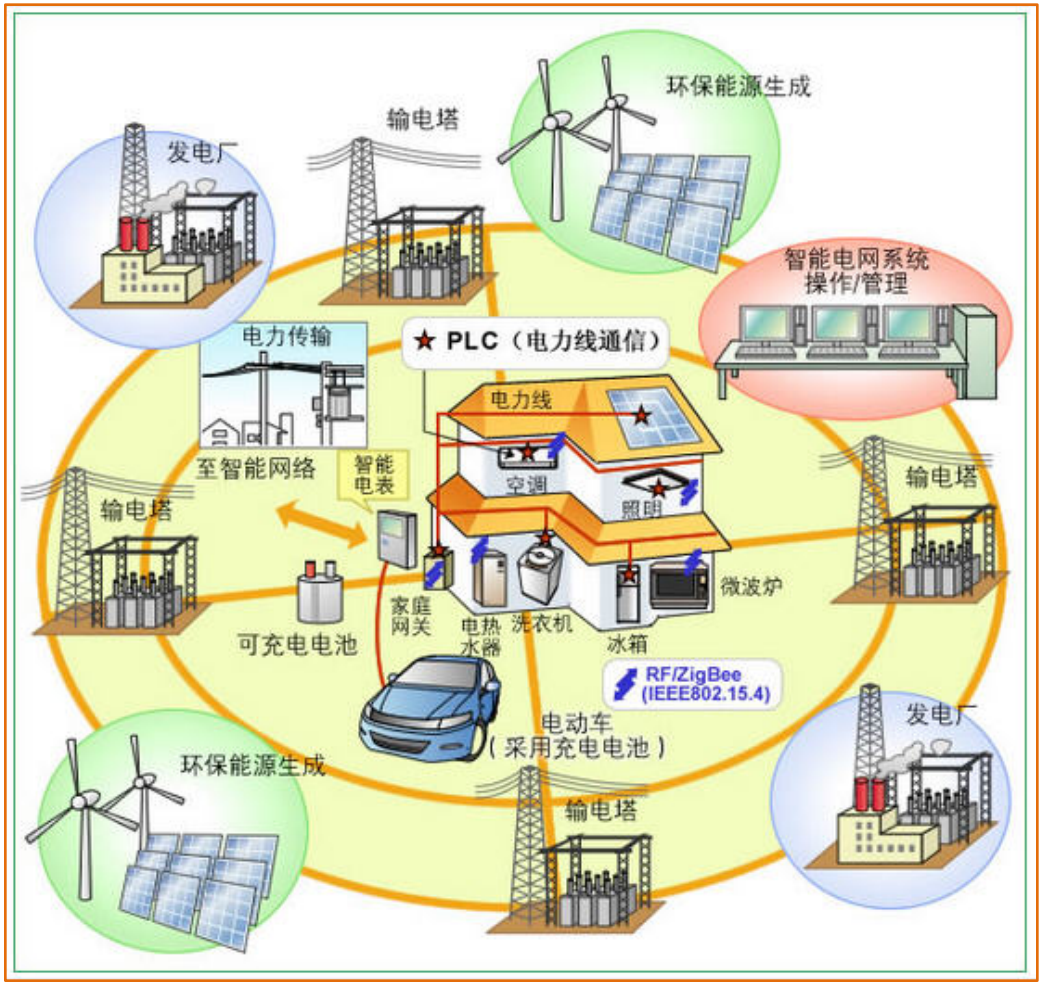
Source: Global Energy Interconnection Development and Outlook Report 2017, GEIDCO.

China's National Targets Support Renewable Energy

中国能源发展“十三五”规划 China's Energy Development 13th Five Year Plan

“互联网+”智慧能源发展
“Internet Plus” Smart Energy

推动可再生能源生产智能化，集中式与分布式储能协同发展，能源消费智能化。
China aims to achieve smart energy system, integrating energy production, transmission, storage and consumption with the internet, cloud computing and big data.



扎耶德未来能源奖 The Zayed Future Energy Prize

扎耶德未来能源奖由阿联酋政府设立于2008年，致力于弘扬环境、社会与经济的与可持续发展，体现了阿联酋已故国父谢赫·扎耶德·本·苏旦·阿勒纳哈扬的愿景。已有2.89亿世界人口受益于获奖者在可持续发展方面所做出的贡献。获取更多信息，请访问：www.ZayedFutureEnergyPrize.com.

The Zayed Future Energy Prize was established by the UAE leadership in 2008 in honour of the environmental, social, and economic sustainability advocated by the nation's founding father, Sheikh Zayed bin Sultan Al Nahyan (God bless his soul). More than 289 million people are experiencing the sustainable actions of the prize's winners. For more information, please visit www.ZayedFutureEnergyPrize.com.

阿布扎比国际能源周（ADSW），由Masdar主办，是阿布扎比政府发起的，旨在解决清洁能源、水和可持续发展有关的挑战。世界未来能源峰会主持，ADSW包含一系列会议、展览和活动，包括国际可再生能源机构的联合国大会、扎耶德未来能源奖颁奖典礼，国际水资源峰会、中东固体废物处理、回收与利用展览会和马斯达城节。ADSW是辐射中东地区国家规模最大的可再生能源会议，吸引着全球的政策制定者、行业思想领袖和清洁技术创新者，汇集来自170余国家的3万5千余名参会人员。

The annual Abu Dhabi Sustainability Week (ADSW), hosted by Masdar, is an Abu Dhabi government initiative that aims to address the interconnected challenges of clean energy, water and sustainable development. Anchored by the World Future Energy Summit, ADSW features a series of complementary conferences, exhibitions and events, including the general assembly of the International Renewable Energy Agency, the Award Ceremony of the Zayed Future Energy Prize, the International Water Summit, EcoWASTE and The Festival at Masdar City. ADSW is the largest gathering on sustainability in the Middle East, attracting global policy makers, industry thought-leaders and clean-tech innovators among more than 35,000 attendees representing around 170 countries.

THANK YOU !

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